



WINGO SERVICE COMPANY INC.

Case Study: Geopolymer Solutions, LLC (GPS)

Geopolymer Solutions recently resolved a major mixing challenge on a newly designed advanced mixing system with Wingo Service's help.

The GPS polymer-based advanced mixer was manually operated and was not able to initiate the startup phase. The manual system needed an update to ensure peak performance and eliminate the frequent stop and slowdown.

As a result of the solution, the advanced mixing system now operates smoothly, with an efficient start up and steady-state process. The new system also expedites the accurate identification of any issues and direct staff to the most appropriate preventive maintenance and repairs.

Wingo Service Company, Inc., which over the past 3 decades has handled electrical service calls in the Houston area for everything from instrumentation and analyzer repair/maintenance to construction of power and control systems.

GPS initially consulted with another electrical services provider but when they were unable to find a solution for GPS, Wingo Service got its chance.

After contacted by GPS, Wingo Service got to work to meet the challenging deadlines and identify the technical solution. Wingo Service engineers quickly identified a limited start current issue related to the high current starts requirement of the across the line starting motors. With the original system none of the motors could be started. It was determined that this was because the start-up phase of operation required a high-torque/high-voltage function on the motor (see *Figure 1.1*). Additionally, there was a gear reduction issue on the drive, so the gears on the chain drive were swapped out for the appropriate sizes.

The advanced mixer utilized a Variable-Frequency Drive (VFD) which is a type of adjustable-speed drive used in electro-mechanical drive systems to control AC motor speed and torque by varying motor input frequency. With the VFDs installed the speed control that was needed to allow for a more accurate batch was in place.

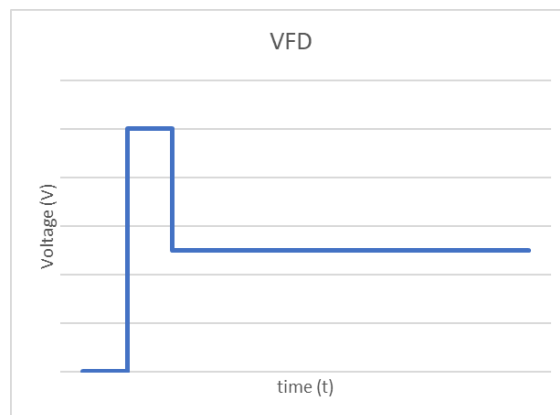


Figure 1.1

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For the PLC programming to automate this, the weight scale was used to give feedback to the algorithm, where input=output, the PLC controlling the VFD's automatically adds the prescribed amount for each of the batched products moving the products fast initially, then more slowly as the batched product approaches setpoint. This new programming allowed the current Sine wave peak to be reduced (see *Figure 2.1*).

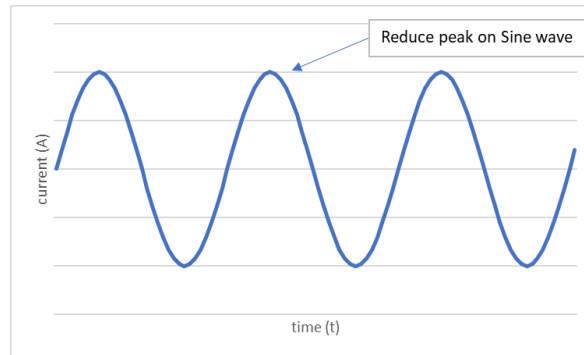


Figure 2.1

Additionally, a test furnace was developed to eliminate the need to send the test samples to an off-site third-party vendor, which reduced cost and saved time in an already tight schedule.

Because of the improvements, GPS's own managers and technicians can now handle virtually all of the advanced mixer's necessary repairs in-house. It's infinitely more time-efficient and cost-effective than pre-improvement, when the advanced mixer system required highly specialized, third-party service technicians who tended to be out of the country or unavailable when needed.

GPS's President, Rodney Zubrod, gave Wingo Service and its team a glowing endorsement when he said, "We were two months behind schedule on the construction of our plant and we had no outlook for fixing our technical control problems. Then, we contacted our neighbor Wingo Service Company. Somehow we finished on-time and had a plant that operated with greater efficiency than originally designed. Wingo stopped our monetary bleeding and completed the project with a professional posture unequalled in the industry they serve. We don't bother shopping for these services any longer."